

REMARKS

Claims 1-20 remain pending in the present application.

As a preliminary matter, Applicants note that the Office Action dated February 12, 2003 has been improperly made final, since a new ground of rejection was made against claims 1-2 and 6-9, which were not amended in the response filed on October 31, 2002 in response to the Office Action dated July 31, 2002. As instructed in MPEP 706.07(a), “second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant’s amendment of the claims nor based on information submitted in an information disclosure statement during the period set forth in 37 C.F.R. 1.97(c) with the fee set forth in 37 C.F.R. 1.17(p).” (Emphasis added). Since the new ground of rejection against claims 1-2 and 6-9 in the Office Action dated February 12, 2003 was neither necessitated by an amendment presented by Applicants nor by an information disclosure statement filed by Applicants, it is respectfully submitted that the finality of that Office Action should be withdrawn. *OK*

Fig. 1 is proposed to be amended as marked in red on the attached copy thereof. The proposed change corrects two reference numbers which have been switched. The correction is supported in the specification at page 5, lines 17-18 and page 8, lines 10-11, for example. Approval of the proposed drawing change is respectfully requested. *OK*

Claims 19 has been rejected under 35 U.S.C. 102(b) as being anticipated by Fee (U.S. Patent No. 5,943,352).

Claim 19 in the present application recites “adjusting a tuning current applied to [the] laser device in response to output power,” and “simultaneously, adjusting a wavelength characteristic of [the] laser device in response to an optically filtered transmission fraction of [the] output power.[”]

In contrast to the claimed invention, Fee discloses a laser device which adjusts a tuning current in response to a wavelength difference between the wavelength of the output signal 122 and the wavelength of the reference input signal 134 (col. 4, lns. 30-44). Thus, Fee fails to teach “adjusting a tuning current . . . in response to output power” as recited in Applicants’ claim 19. (11) OK

Fee also fails to teach an optically filtered transmission fraction of the output power. In addition to the fact that Fee does not mention output power, the only filters mentioned in Fee are the filters 208 disclosed with respect to the different possible input frequencies to the laser diode 106. These filters 208 do not yield a fraction of the output power from the laser diode 106, and nothing is adjusted in response to an output of these filters. Thus, Fee does not disclose “adjusting a wavelength characteristic of [the] laser device in response to an optically filtered transmission fraction of [the] output power” as recited in claim 19. (6)

Furthermore, Fee fails to teach “simultaneously adjusting a wavelength characteristic of [the] laser device” with “adjusting a tuning current applied to [the] laser device” as further recited in the claim. Specifically, column 6, lines 7-26 (esp. lines 20-26) and column 8, lines 23-28 teaches regulating the current first, and then adjusting the wavelength by changing the temperature.

It is also noted that the “second loop” identified by the Examiner is merely a branch of wavelength output sample signal 122 which is fed to the stable switched multifrequency source 104, as evidenced in Fig. 4 and disclosed at column 7, lines 1-10. Again, there is absolutely no disclosure or suggestion of obtaining an “optically filtered transmission fraction of the output power” along this loop.

For each of the above reasons, Applicants’ respectfully submit that claim 19 is not anticipated, and furthermore, is not rendered obvious, by Fee. Accordingly, withdrawal of this rejection under 35 U.S.C. 102 is respectfully requested. NL

Claims 1-5 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Fee in view of Johnson (U.S. Patent No. 5,832,014).

As mentioned above, the rejection of claims 1-2 on this ground is an improper final rejection, since claims 1 and 2 were not amended in the last response. Additionally, however, claims 1-5 and 10 are patentably distinguishable over the cited combination of Fee and Johnson, as discussed below.

Claim 1 is directed to a “method of operating a distributed Bragg reflector laser device” (“DBR” laser device) comprising “using a first feedback loop to periodically adjust a characteristic of [the] laser device in response to a sensed wavelength,” and “using a second feedback loop to periodically adjust a current applied to [the] laser device in response to a sensed amplitude,” “wherein . . . using [the] second feedback loop occurs during [the] step of using [the] first feedback loop.”

As demonstrated above, Fee only discloses adjusting a current applied to the laser device in response to a wavelength difference of the output signal 122 and a wavelength of a reference signal 134 provided by the stable carrier wavelength reference 136. Thus, Fee fails to disclose adjusting the current “in response to a sensed amplitude” as recited in claim 1. Moreover, since Fee discloses that the characteristic (temperature) is adjusted in response to a sensed wavelength only after the current has been adjusted, Fee also fails to disclose “using [the] second feedback loop [] during . . . using [the] first feedback loop” as further recited in claim 1. (C)

Johnson, like Fee also fails to disclose operating any feedback loop based on a sensed amplitude as recited in claim 1. Instead, Johnson’s laser device operates its feedback loop 22 based on spontaneous emission of the tuning section, which represents the active layer carrier density of the laser device, and thus, the output wavelength (col. 4, lns. 22-25; col. 4, ln. 66 – col. 5, ln. 10).

Johnson also fails to disclose operating a first feedback loop to adjust a characteristic of the laser device in response to a sensed wavelength during operation of a second feedback loop in response to sensed amplitude as recited in the claim.

The Office Action states at lines 4-6 on page 3 that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention that the tuning process in Fee may be applied to other types of lasers, such as the DBR laser in Johnson.” No explanation or citation to any passage in the references is provided to support this statement. Moreover, such a modification is infeasible.

Although the laser device disclosed in Johnson is a DBR laser device, Fee complains at column 1, line 59 through column 2, line 3 that DBR laser devices have too narrow of a range and cannot cover the full 200 nm bandwidth available on a wavelength division multiplexing system (col. 1, lns. 59-61). Specifically, Fee’s disclosed invention is an external cavity laser which overcomes the perceived disadvantages of the laser types disclosed in “Related Art” section, including the DBR laser devices. (See col. 2, lns. 20-23, 29-31. Thus, Fee teaches away from any modification of its disclosed laser device with a DBR laser device, as this would destroy an important feature of Fee’s disclosed device, *i.e.*, the ability to operate in the full 200 nm bandwidth available on a wavelength division multiplexing system.

Claims 2-5 and 10 each depend ultimately from claim 1, and recite additional features which, when considered in combination with the features recited in claim 1 and any respective intervening claims, are not taught or suggested in the cited combination of references. For example, neither Fee nor Johnson discloses or suggests a third feedback loop to adjust a gain current to the laser device, or that such third feedback loop is operated in response to a sensed amplitude and during operation of the first feedback loop, as recited in claims 3, 4, and 5, respectively.

In view of the foregoing, Applicants submit that each of claims 1-5 and 10 are not rendered obvious over the cited combination of Fee and Johnson, and withdrawal of this rejection is courteously requested.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (U.S. Patent No. 5,943,352) as applied to Claim 1 above.

This rejection is not understood. Claim 1 was rejected over the combination of Fee and Johnson. Moreover, claim 20 depends from claim 19. It is presumed, therefore, that the rejection intended to state “as applied to claim 19 above,” rather than “as applied to claim 1 above.” (Emphasis added).

The Office Action states: “Fee does not teach using a microprocessor to control the tuning steps. However, using a computer to control and monitor a laser device is standard in the art.” Absolutely no support has been demonstrated in the prior art for this conclusion. The Office Action is effectively combining Fee with unrevealed prior art as a secondary reference. 

Prior art rejections must be based on evidence. Graham v. John Deere Co., 383 U.S. 1, 17 (1966). Even if an obviousness rejection is based on the level of ordinary skill in the art, prior art references are needed to show what that level of skill was. *See, e.g., In re Kaplan*, U.S.P.Q. 678, 683 (Fed. Cir. 1986). The unrevealed prior art relied upon in the rejection is at the heart of the rejection. Without knowing the prior art on which the rejection is based, Applicants cannot make an intelligent reply as to whether or not the unrevealed prior art does, in fact, disclose or suggest the invention. Accordingly, the Examiner is requested to either supply a copy of the prior art basis for the rejection, or withdraw the rejection.

In the event that the basis for rejecting the claim on unrevealed prior art may be interpreted to be a taking of “official notice” by the Examiner, Applicants note that this is also an improper “justification” for the unsupported rejection. Such a reliance on official notice would essentially amount to an outright dismissal of at least one substantive feature of the claimed invention representing at least one significant difference from the cited prior art.

MPEP § 2144.03 provides guidance to the examining corps as to when official notice may be taken without supporting documentary evidence or when a rejection may rely on common knowledge in the art, and what evidence is necessary to support the conclusion of common knowledge in the art in the rejection. In particular, this section of the MPEP instructs that “[i]t is never appropriate to rely solely on ‘common knowledge’ in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based.” MPEP 2144.03(A). In other words, “there must be some form of evidence in the record to support an assertion of common knowledge.” MPEP 2144.03(B).

The case law amply supports the discriminating application of official notice and assertion of common knowledge. For example, In In re Eynde, Pollet, and de Cat the predecessor court to the Federal Circuit “reject[ed] the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art . . . are not amendable to the taking of such notice.” 178 USPQ 470, 474 (CCPA 1973). Rather, the taking of official notice is only permitted “to supplement or clarify the teaching of a reference disclosure, . . . to ‘fill in the gaps.’” Thus, judicial notice may not comprise “the principle evidence upon which a rejection [is] based.” In re Ahlert and Kruger, 165 USPQ 418, 421 (CCPA 1970) (emphasis added).

In the present case, the taking of official notice serves much more to merely “fill in the gaps.” Here, the “facts” which the Office Action asserts is common knowledge constitute a significant and substantive aspect of the claimed invention. As such, the taking of official notice of a recited claim feature, *i.e.*, that the adjusting steps are performed by a

programmed microprocessor as recited in claim 20, is improper, especially in light of the problems experienced in the prior art discussed on page 1, line 17 through page 2, line 5 of Applicants' specification. The Examiner is therefore requested to produce a reference in a context which renders obvious the claimed invention, or alternatively, withdraw the rejection.

Claims 6-9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Fee (U.S. Patent No. 5,943,352) in view of Johnson (U.S. Patent No. 5,832,014) as applied to Claim 2 above, and further in view of Kuo et al. (U.S. Patent No. 6,222,861).

As mentioned above, this is a new ground of rejection against claims which were not amended in the last response, and is therefore improperly final. Furthermore, the claims are allowable over the cited references because, as discussed above, both Fee and Johnson, either alone or in combination, fail to teach or disclose each and every feature of the invention recited in claim 1, from which claims 6-9 ultimately depend. Since claims 6-9 depend ultimately from claim 1, claims 6-9 are also patentably distinguishable over the combination of Fee and Johnson for at least the same reasons attributable to claim 1. These claims also recite additional subject matter which, upon combination of the features recited in claim 1 and any intervening claims, are also not rendered obvious by these references. The addition of Kuo to the cited combination does not remedy the deficiencies of Fee and Johnson in meeting Applicants' claims.

Kuo teaches a method and apparatus for controlling the wavelength of a laser, in which a portion of the modulated optical signal is split off from the modulator 114 output to be transmitted to a feedback loop which controls the wavelength of the laser 112. Kuo, like Fee and Johnson, fails to teach or suggest, *inter alia*, using a second feedback loop to adjust a current of the laser device in response to a sensed amplitude, and using the second loop during use of a first feedback loop to adjust a characteristic of the laser device in response to a sensed wavelength, as recited in independent claim 1. Thus, the addition of Kuo to the combination of Fee and Johnson does nothing to meet even independent claim 1, much less dependent claims 6-9. As such, withdrawal of the rejection over the

combination of Fee, Johnson and Kuo is respectfully requested.

Claims 11-17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Bielas (U.S. Patent No. 6,359,918) in view of Deacon (U.S. Patent No. 6,341,189).

Independent claim 11 recites “providing data in a memory representative of mode-hopping values for [a] tunable light source,” and “with reference to [the] data, calculating a value representative of a tuning current for [the] tunable light source.” Independent claim 15 is directed to a “method of changing the wavelength channel of a laser device,” and recites “operating [a] laser device at a first wavelength,” and “applying a tuning current to [the] laser device as a function of a second wavelength and mode-hopping data stored in a memory.”

Bielas teaches starting up a laser device using a look-up table indicating the amount of current to be provided to a light source corresponding to an inputted temperature value of the light source. The Office Action acknowledges that Bielas fails to teach or suggest “providing data in a memory representative of mode-hopping values” and calculating a tuning current value based on the data, as recited in claim 11. Bielas also fails to teach or suggest “applying a tuning current to [the] laser device as a function of a second wavelength and mode hopping data stored in a memory” as recited in claim 15. Accordingly, the Office Action seeks to combine Bielas with the teachings of Deacon to support its conclusion of obviousness against the claimed invention. As will be explained below, however, cited combination of Bielas and Deacon is insufficient to render obvious the claimed invention.

The cited passage in Deacon merely discloses that “changing the chip temperature shifts both grating and mode frequencies . . . leading to mode hopping behavior.” The Office Action reasons that because it is desirable to avoid mode-hopping, “it would have been obvious to one of ordinary skill in the art at the time of the invention to use data values corresponding to mode-hopping values in Bielas, to more accurately tune said laser device.” As pointed out in the last response, there is nothing in either Bielas or

Deacon which supports the notion that changing the data in the Bielas look-up table 36 to mode-hopping data would improve tuning accuracy.

Moreover, simply because look-up tables and the desire to avoid mode-hopping are known in the general body of prior knowledge, there is simply nothing in either Bielas or Deacon to suggest to one of ordinary skill in the art to substitute the look-up data in Bielas with mode-hopping data (which is not disclosed in either reference). As recognized by the Federal Circuit in Panduit Corp. v. Dennison Mfg. Co., “[v]irtually all inventions are necessarily combinations of old elements.” 810 F.2d 1561, 1 U.S.P.Q.2d 1593, 1603, *cert. den.*, 481 U.S. 1052 (1987). “But the elements are capable of an infinity of permutations,” Judge Learned Hand observed in B.G. Corp. v. Walter Kidde & Co., Inc., “and the selections of that group which proves serviceable to a given need may require a high degree of originality. It is that act of selections which is the invention.” 79 F.2d 20, 26 U.S.P.Q. 288, 289 (2d Cir. 1935). Thus, in establishing obviousness by combining or modifying prior art references, it is required that the teaching, suggestion or incentive for combining the references be found in the prior art.

The requirement for demonstrating motivation in the references when rejecting a claim under obviousness is well-established in case law. In In re Mills, the Federal Circuit held that “[w]hile [the prior art] apparatus may be capable of being modified to run the way [applicant’s] apparatus is claimed, there must be a suggestion or motivation in the reference to do so.” 916 F.2d 680, 682, 16 U.S.P.Q.2d 1430, 1432 (1990). Similarly, in Ex Parte Levengood, the Board of Appeals reversed a rejection, stating that “[a]t best, the examiner’s comments regarding obviousness amount to an assertion that one of ordinary skill in the relevant art would have been able to arrive at the appellant’s invention because he had the necessary skills to carry out the requisite process steps. This is an inappropriate standard for obviousness.” 28 U.S.P.Q.2d 1300, 1301 (Bd. Pat. App. Int. 1993). *See also* In re Bond, 910 F.2d 831, 834, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990); MPEP 2143.01.

Unless the references themselves provide motivation to modify a prior art invention in the manner claimed by Applicants, any conclusion that Applicants' claimed invention is obvious over Bielas and/or Deacon constitutes improper hindsight reconstruction based on knowledge gleaned from Applicants' own specification, and as such, is impermissible. *See, e.g., In re Gorman*, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991) (stating that “[i]t is impermissible . . . [to use] the applicant's structure as a template and [select] elements from references to fill the gaps.”). *See also* MPEP 2141 (instructing that “[w]hen applying 35 U.S.C. 103, the following tenets of patent law must be adhered to: . . . (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.”). In this case, one of ordinary skill in the art only would have been motivated to arrive at the claimed invention based on Bielas and the cited passage in Deacon by improperly reconstructing the claimed invention using hindsight knowledge of Applicants' disclosed invention.

The first paragraph on page 7 of the Office Action asserts that “[c]ombining Bielas and Deacon merely shows that the look-up table method in Bielas may be altered for different parameters, such as mode-hopping values for a laser. Even if it is assumed, *arguendo*, that storage of mode-hopping data in memory is known to be provided in look-up table form, and that there is motivation in the prior art for such modification of Bielas to replace the original data of Bielas with the mode-hopping data, operation of Bielas' method as thus modified would result in applying a current to the laser device to output one of the wavelength values listed in the modified look-up table at precisely one of the unstable mode-hopping points. The modification proposed in the Office Action would yield this result because in the claimed invention, data corresponding to the points at which mode-hopping occurs is stored, while the values of operation fall between the stored values. Bielas teaches merely to operate the disclosed apparatus according to one of the stored data points stored in the look-up table, without subsequent calculation.

Claims 12-14 depend from independent claim 11, and recite additional features which, which considered in combination with the features recited in the latter, further distinguish the present invention over Bielas and Deacon. [With respect to independent claim 15, it is noted that none of the elements recited in the claim have been addressed in the Office Action.] However, neither Bielas nor Deacon disclose operating a laser device at a first wavelength and then applying a tuning current to the laser device as a function of a second wavelength an mode-hopping data stored in a memory , as recited in the claim. Thus, claim 15 is not rendered obvious by Bielas or Deacon. Claims 16-17 depend from claim 15 and recite additional features which, which considered in combination with the features recited in the latter, further distinguish the present invention over Bielas and Deacon.

In view of the foregoing, Applicants courteously request that the rejection of claims 11-17 over Bielas and Deacon be withdrawn.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bielas (U.S. Patent No. 6,359,918) in view of Deacon (U.S. Patent No. 6,341,189), as applied to claim 15 above, and further in view of Johnson (U.S. Patent No. 5,832,014).

Claim 18 depends form claim 15. As discussed above, neither Bielas nor Deacon, either alone or in combination, teach or suggest each and every feature of the invention recited in claim 15, taken as a whole. Johnson discloses a device which avoids mode-hopping. Thus, the combination of Bielas, Deacon and Johnson is insufficient to render obvious the invention as recited in claim 15. Claim 18 recites additional features which, which considered in combination with the features recited in the latter, further distinguish the present invention over Bielas, Deacon and Johnson. As such, withdrawal of this rejection is respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to favorably reconsider the present application and to pass the application to issue.

Dated: May 12, 2003

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